

Amendment and Response
Applicant: Kenneth Smith et al.
Serial No.: 10/743,662
Filed: Dec. 22, 2003
Docket No.: 10013804-1
Title: MRAM WITH CONTROLLER

IN THE CLAIMS

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims:

1. (Original) A memory card comprising:
a magnetic random access memory (MRAM) array that comprises a plurality of magnetic memory cells; and
a controller coupled to the MRAM array;
wherein the controller is configured to communicate with a host device, and wherein the controller is configured to perform an error correction function associated with at least one of the plurality of magnetic memory cells.

2. (Original) The memory card of claim 1 wherein the controller comprises an error correction module, and wherein the error correction module is configured to perform the error correction function.

3. (Original) The memory card of claim 2 wherein the error correction module comprises Reed-Solomon encoding and decoding devices.

4. (Original) The memory card of claim 3 wherein erasure encoding is implemented into the Reed-Solomon decoding device.

5. (Original) The memory card of claim 2 wherein the error correction module is configured to perform a data layout algorithm.

6. (Original) The memory card of claim 1 wherein the controller comprises a sparing module, and wherein the sparing module is configured to perform the error correction function.

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7. (Original) The memory card of claim 6 wherein the sparing module is configured to implement sector sparing.

8. (Original) The memory card of claim 1 wherein the controller is configured to perform the error correction function in response to a write operation.

9. (Original) The memory card of claim 1 wherein the controller is configured to perform the error correction function in response to a read operation.

10. (Original) A system comprising:

a host device; and

a memory card coupled to the host device, the memory card comprising a magnetic random access memory (MRAM) array that comprises a magnetic memory cell and a controller coupled to the MRAM array;

wherein the controller comprises an error correction module and a sparing module, and wherein the controller is configured to cause error correction functions to be performed using the error correction module and the sparing module.

11. (Original) The system of claim 10 wherein the host device comprises an input / output (I/O) controller that comprises a first interface and a second interface that differs from the first interface, wherein the memory card comprises a third interface, and wherein the third interface is coupled to the first interface.

12. (Original) The system of claim 10 wherein the host device comprises a first Smart Media interface, wherein the memory card comprises a second Smart Media interface, and wherein the memory card is coupled to the host device using the first and second Smart Media interfaces.

13. (Original) The system of claim 10 wherein the error correction module comprises Reed-Solomon encoding and decoding devices.

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14. (Original) The system of claim 13 wherein erasure encoding is implemented into the Reed-Solomon decoding device.

15. (Original) The system of claim 10 wherein the sparing module is configured to implement sector sparing.

16. (Original) The system of claim 10 wherein the sparing module is configured to implement row sparing.

17. (Original) The system of claim 10 wherein the sparing module is configured to implement column sparing.

18. (Original) A method performed by a memory card that comprises a controller and a magnetic random access memory (MRAM) array coupled to the controller comprising:
detecting a data transfer command associated with at least one magnetic memory cell in the MRAM array from a host device; and
performing an error correction function associated with the data transfer command.

19. (Original) The method of claim 18 further comprising:
performing the error correction function using an error correction module in response to the data transfer command being a write command.

20. (Original) The method of claim 18 further comprising:
performing the error correction function using a sparing module in response to the data transfer command being a read command.

21. (Original) A memory card comprising:
a magnetic random access memory (MRAM) array that comprises a plurality of magnetic memory cells; and
a controller coupled to the MRAM array;

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wherein the controller is configured to communicate with a host device, and wherein the controller comprises a means for performing an error correction function associated with at least one of the plurality of magnetic memory cells.

22. (Original) The memory card of claim 21 wherein the means is for performing the error correction function in response to a write operation.

23. (Original) The memory card of claim 21 wherein the means is for performing the error correction function in response to a read operation.

24. (New) The memory card of claim 1 wherein each of the plurality of magnetic memory cells includes a first layer of magnetic film with an alterable direction of magnetization and a second layer of magnetic film with a fixed direction of magnetization.